Patent claims

1. Pigment with at least a surface area whose smallest dimension is at least a multiple of the largest wave length (ca. 400 nm) of ultraviolet light, marked by the fact that the pigment at least exhibits a surface area a defined diffractive structure, which has a spatial periodicity with a spatial period, which at least a multiple of the largest wave length (ca. 400 nm) of ultraviolet light.

2. Pigment according to Claim 1, marked by the fact that the smallest dimension of the surface area is at least a multiple of the largest wave length (ca. 800 nm) of visible light and the pigment exhibits on at least one surface area at least one defined diffractive structure with a spatial periodicity showing a spatial period that is at least a multiple of the largest wave length (ca. 800 nm) of visible light.

3. A pigment according to one of the claims of 1 through 2, marked by the fact that it has the shape of a platelet and of which at least one surface area is the entire surface of one of the platelet sides.

4. A pigment according to one of the claims of 1 through 3, marked by the fact that it shows a periodic diffractive structure extending over the entire pigment with a definite spatial frequency and spatial alignment.

5. A pigment according to one of the claims of 1 through 3, marked by the fact that it shows different areas with, in each case, divergent periodic diffractive structure.

6. Pigment according to Claim 5, marked by the fact that the different areas with a divergent periodic diffractive structure in each case differ in the

spatial frequency and/or spatial alignment of the periodic structure of the prevailing area.

7. A pigment according to one of the claims of 1 through 6, marked by the fact that it shows a diffractive structure for ultra-violet light and a diffractive structure for visible light.

8. Pigment according to one of the claims of 1 through 7, marked by the fact that it shows a rotation symmetrical diffraction grating with a cluster of concentric circular diffraction lines.

9. Pigment according to one of the claims of 1 through 7, marked by the fact that it shows a star-shaped or polygon-shaped diffraction grating with a cluster of concentric polygon-like diffraction lines.

10. Pigment according to one of the claims of 1 through 9, marked by the fact that it shows a periodic diffractive structure extending over the entire pigment shows, which is an overlay of differently determined spatial frequencies and spatial alignments.

11. Pigment according to Claim 10, which is marked by the fact that it is a cutout from a hologram.

12. Pigment according to one of the claims of 1 through 11, marked by the fact that it consists of an optically permeable material, whereby the defined diffractive structure is conferred by a defined spatial allocation of the pigment thickness and/or the refraction index of the pigment material.

13. Pigment according to one of the claims of 1 through 11, marked by the fact that it contains an optically permeable material in the interior of which a reflective layer is arranged.

14. Pigment according to one of the claims in 1 through 11, marked by the fact that the defined diffractive structure by a defined spatial allocation of rises and depressions of a reflective surface layer of the pigment is conferred.

15. Pigment according to one of the claims of 1 through 11, marked by the fact that it exhibits an inner diffractive structure, which is enclosed by an optically permeable sealant material.

16. Pigment according to one of the claims in 1 through 15, marked by the fact that its dimensions in the platelet plane lie in the range between 5 µm and 200 µm and specifically in the range between 10 µm and 30 µm.

17. Pigment according to one of the claims in 3 through 16, marked by the fact that its length and width lie in the range between 5 µm and 200 µm and specifically in the range between 10 µm and 30 µm.

18. Pigment according to Claim 17, marked by the fact that its thickness lies in the range between 0.1 µm and 10 µm and more particularly in the range between 0.5 µm and 5 µm.

19. Pigment according to one of the claims of 1 through 18, marked by the fact that it is built up out of at least two layers lying on top of each other.

20. Pigment according to one of the claims in 3 through 18, marked by the fact that it has a defined diffractive surface structure on both platelet surfaces.

21. Pigment according to one of the claims in 15 through 20, marked by the fact that the sealant consists of a hydrophobic material.

22. Pigment according to one of the claims in 15 through 20, marked by the fact that the sealant consists of a hydrophilic material.

23. Pigment according to one of the claims in 15 through 20, marked by the fact that the sealant on one side of the platelet consists of a hydrophobic material and on the other side of a hydrophilic material.

24. Procedure for the production of pigments according to one of the claims in 1 through 23, which presents the following steps:

    a) Production of a defined diffractive structure in or on a foil-like carrier medium;

    b) Coating the defined diffractive structure on the medium with a sealant substance;

    c) reduction of the foil-like medium processed in steps a) and b) to pigment particles.

25. Procedure according to Claim 24, marked by the fact that Step a) occurs by embossing, particularly by hot stamping, Thixo stamping or reaction embossing.

26. Procedure according to Claim 24, marked by the fact that Step a) is carried out by embossing, particularly by hot stamping, Thixo stamping or reaction embossing.

27. Procedure according to Claim 24, marked by the fact that Step a) is carried out by scratching the surface of the medium.

28. Procedure according to one of the claims in 24 through 27, marked by the fact that in Step b) the diffractive structure is coated with a reflective layer.

29. Procedure according to one of the claims in 24 through 28, marked by the fact that Step b) takes place through epitaxy, specifically vapor or fluid deposition.

30. Procedure according to one of the claims in 24 through 28, thereby marked by the fact that Step b) takes place through vapor-coating, specifically metal-vapor-coating.

31. Procedure according to one of the claims in 24 through 30, thereby marked by the fact that Step c) consists in snipping the foil-like carrier medium.

32. Procedure according to one of the claims in 24 through 30, marked by the fact that the foil-like medium employed in Step a) consists of a relatively elastic, pliable basic layer as its initial layer, which a relatively brittle second layer is applied onto and/or introduced in it, in and/or on which the defined diffractive structure will be produced, and that Step c) consists in folding the foil-like carrier medium.

33. Procedure according to Claim 24 though 32, marked by the fact that the sealant material used in Step b) is a brittle, specifically lacquer-like or resin-like material, and that Step c) presents pulverization.

34. Procedure according to Claim 33, marked by the fact that the pulverization in Step c) takes place by wet pulverization.

35. Pigment powder that exhibits pigments according to one of the claims in 1 through 23, which are produced according to the procedure according to one of the claims in 24 through 34.

36. Pigment powder according to Claim 35, marked by the fact that the pigments are coated with an auxiliary agent.

37. Pigment powder according to Claim 36, marked by the fact that the auxiliary agent is a wetting agent.

38. Print color which contains a pigment powder according to one of the claims in 35 through 37.

39. Lacquer which contains a pigment powder according to one of the claims in 35 through 37.

40. Transparent plastic, specifically PET, PEN, PBT, PA, PC, which contains a pigment powder according to one of the claims in 35 though 37.

41. Document, which for its authentication shows one of the following features:

- a printed imprint out of print color and/or ink according to claim 38

- a label made from a transparent plastic according to Claim 40.